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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,125	02/26/2004	Cynthia W. Berry	1215-0506P (000550-078)	1857
2292	7590	07/28/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH			GEBREMARIAM, SAMUEL A	
PO BOX 747			ART UNIT	PAPER NUMBER
FALLS CHURCH, VA 22040-0747			2811	

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/786,125	Applicant(s) BERRY ET AL	
	Examiner Samuel A. Gebremariam	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/11/2006 has been entered. An action on the RCE follows.
2. The amendment filed on 6/20/2006 has been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al., US patent No. 6,528,875 in view of Uchikoba US patent No. 6,698,084.

Regarding claim 1, Glenn teaches (fig. 1a): a co-fired (stacked ceramic is fired together) multilayer laminate ceramic (fig. 1a and col. lines, 35-37); plurality of stacked co-fired (fired together) layers of ceramic material (30,32,34) including metallization (19, 21, where vias 21 are filled with conductors) in predetermined patterns on and through

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the layers (30 and 32); the stacked layers including a plurality of exposed electrical conductors (layer 19 that is exposed and connected to 20) including leads (18) thereon at a predetermined locations; the conductors being of a metal which includes one or more additives to promote adhesion to the ceramic layer (conductor 19 is formed of gold-nickel alloy) on which the conductors are deposited (gold-nickel alloys adheres well on ceramic); a bonding metal layer (20) applied to the conductors (19) at the predetermined locations and the leads (18) being bonded to the bonding metal layer (20).

Glenn does not explicitly teach that the bonding metal layer being of the same metal as the conductors, however devoid of the one or more additives.

Uchikoba teaches (figs. 1A-1C) forming a conductive electrode (43) that is formed of gold and nickel and connected a gold bump (31, no nickel) in the structure of forming a semiconductor device package.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the gold-nickel to gold connection taught by Uchikoba in the structure of Glenn in order enhance the reliability of the bonding during operation. Therefore the combined structure of Glenn and Uchikoba teaches the bonding metal layer being of the same metal as the conductors (gold), however devoid of the one or more additives (nickel is taken to be the additive) and the leads are bonded to the bonding metal layer at the predetermined locations.

The limitations of "wherein the bonding layer is applied to the conductors prior to a co-firing of said layers of ceramic material and then co-fired along, with said layers of

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ceramic material or the bonding layer is applied to the conductors and post fired after an initial co-firing of said layers of ceramic material” is considered a product-by-process claim. “[E]ven though product-by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 2, Glenn teaches substantially the entire claimed structure of claim 1 above including the bonding metal layer is the conductors only at the predetermined locations where the leads are bonded (refer to fig. 1a).

Regarding claim 3, Glenn teaches substantially the entire claimed structure of claim 1 above including the conductors are of a gold paste/layer (layer 19 is gold with nickel as the additive) with the additives; bonding metal layer is of a pure gold paste/layer (layer 31 of Uchikoba is formed of only gold) devoid of the additives (no nickel).

Regarding claims 4 and 8, Glenn teaches (fig. 1A) substantially the entire claimed structure of claim 1 above including predetermined ones of the layers (30,32,34) include respective cavities (recess 42 and vias 21); predetermined ones of the conductors (19 on 32) being located on at least one said layer (32) below the top layer (34) of the stacked layers (30,32,34); the predetermined ones of the conductors (19) being accessible through the cavities (42) for bonding of the leads (18).

The limitation of the "low temperature co-fired ceramic (LTCC) structure" is considered a product-by-process claim. "[E]ven though product-by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Response to Arguments

5. Applicant's arguments filed on 6/20/2006 have been fully considered but they are not persuasive. Applicant argues that a multi-layer ceramic structure as now claimed is neither shown nor suggested by either the Glen or Uchikoba reference, nor would such be obvious to one skilled in the art without hindsight provided by applicant's own disclosure.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, Glenn teaches a structure that is used to package MEM devices. In

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order to form such a structure Glenn uses a co-fired (fired together) multi-layered ceramic structure. Uchikoba teaches a ceramic multi-layer structure (40) and fifteen inner conductive layers (41) in order to form a surface acoustic wave element that is also a well-known MEMS device. Therefore the references of Glenn and Uchikoba are within the same field of endeavor and therefore the references are combinable.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Gebremariam whose telephone number is (571) 272-1653. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAG
July 24, 2006

Douglas W. Owens 7/24/06

**DOUGLAS W. OWENS
PRIMARY EXAMINER**